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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/164,898	10/01/1998	JAMES AKIYAMA	42390.P3373	7208

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EXAMINER
VITAL, PIERRE M

ART UNIT	PAPER NUMBER
2186	

DATE MAILED: 09/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/164,898	Akiyama, James
Examiner	**Art Unit**
Pierre Vital	2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Aug 20, 2002*

2a) ☒ This action is **FINAL.** 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *19-37* is/are pending in the applica

4a) Of the above, claim(s) _____ is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *19-37* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed August 20, 2002 in response to PTO Office Action mailed June 14, 2002. The applicant's remarks and amendment to the specification and/or the claims were considered with the results that follow.

2. Claims 19-37 have been presented for examination in this application. In response to the last Office Action, claims 19, 25 and 28 have been amended. No claims have been canceled or added. As a result, claims 19-37 are now pending in this application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 19-22, 24-31 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US5,905,910) and Jones et al. (US5,619,723) and Chen (US5,694,581).

As per claims 19, 25, 28 and 35, Anderson teaches a system for multi-threaded disk drive interrupt processing wherein the first and second disk drives 110 and 112 may be integrated device electronics (IDE) disk drives wherein the disk drive itself contains many of the required interface components; with IDE disk drives, a single interface coupled to the bus system 108 is

capable of operating multiple IDE disk drives [Col.5, lines 28-33]; it is the instructions in the BIOS 106 itself that controls the positioning of the read/write head in the first disk drive 110 and the second disk drive 112 [Col.8, lines 12-15]; in the disk striping embodiment of the system 100, a data file is apportioned into blocks that are alternately stored (interleaved) on the first drive 110 and the second drive 112; the system 100 advantageously allows the BIOS 106 to issue commands to both the first disk drive 110 and the second disk drive 112 to allow each of the first and second disk drives to simultaneously (parallel) perform the consuming task of positioning the read/write head at the proper location on the disk drive [Col.8, lines 62-67; Col.9, lines 1-3]; with respect to the disk striping aspect of the system 100, the operating system behaves if there is a single disk drive (single physical drive) rather than the first disk drive 110 and the second disk drive 112 [Col.7, lines 60-63].

However, Anderson fails to specifically teach an interface coupled to said system bus that receives disk drive requests from said BIOS via said system bus; and a striping controller connected between said first and second disk drives and said interface, said striping controller causing data being communicated between said system bus and said first and second drives to be substantially read or written in parallel.

Jones discloses first and said second disk drives each having data separator electronics, data formatting electronics and head positioning electronics [Col.14, Lines 30-55]; said striping controller causing data being transmitted between said interface and said system bus and said first and second drives to be substantially read or written in parallel [Col.16, Lines 32-35].

However, Jones fails to specifically teach an interface connected to the system bus and receiving requests from the BIOS via said system bus.

Chen discloses a system bus coupled to said BIOS [Col. 6, Lines 5-7]; an interface coupled to said system bus that receives disk drive requests from said BIOS via said system bus [Col. 6, Lines 4-7, 30-35].

It would have been obvious to one of ordinary skill in the art, having the teachings of Anderson and Jones and Chen before him at the time the invention was made, to modify the system taught by Jones to include a striping controller connected between said first and second disk drives and said interface, said striping controller causing data being communicated between said system bus and said first and second drives to be substantially read or written in parallel; an interface connected to the system bus and receiving requests from the BIOS via said system bus because it would have improved system performance by allowing reconstruction of data without any down time.

As per claims 20, 29 and 36, Anderson teaches interleaving data so that even sectors are accessed on the first disk drive and odd sectors are accessed on the second disk drive [col.4, lines 16-30].

As per claims 21 and 30, Anderson discloses data being transmitted between the system bus and the first and second disk drives is subdivided into a plurality of sequential blocks [col.8, lines 62-65].

As per claims 22 and 31, Anderson teaches the first disk drive is accessed for every other block of data and the second disk drive is accessed for the remaining blocks [col.11, lines 35-50; col.12, lines 3-23].

As per claim 34, Anderson discloses a control logic receives a system request intended for a single physical drive from the system bus [Col.7, lines 60-63].

As per claims 24 and 33, Anderson discloses mapping bits of the system request to a first system request data structure to be supplied to the first disk drive and a second system request data structure to be supplied to the second disk drive [Col.8, lines 54-61].

As per claim 26, Anderson discloses receiving an IDE request at a striping controller [col.8, lines 65-67].

5. Claims 23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US5,905,910) and Jones et al. (US5,619,723) and Chen (US5,694,581) and further in view of Jenkins (US4,047,157).

As per claims 23 and 32, the combination of Anderson and Jones and Chen teach the claimed invention as detailed above in the previous paragraphs. However, neither Anderson nor Jones nor Chen specifically teach that the system request includes a sector bit string, a head bit string, a track bit string and a driver bit as recited in the claims.

Jenkins teaches a controller for use in a data processing system wherein in the track/sector register 146 Track Address and Sector Address bit positions identify, respectively, the track and sector on a disk to be involved in a transfer; in a fixed-head unit, the Track Address bits identify a specific head [Col.20, lines 38-42]; a Write signal, produced in response to the function bits, enables drivers 297 to load data onto the data set 101 [Col.26, lines 26-28].

It would have been obvious to one of ordinary skill in the art, having the teachings of Anderson and Jones and Chen and Jenkins before him at the time the invention was made, to modify the system taught by Anderson and Jones and Chen to include sector bit string, head bit string, track bit string and driver bit in the system request because it would have improved processing speeds and memory access times by providing the system identification information for the physical location on the drive from which the data file will be read or written as taught by Jenkins.

6. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson (US5,905,910) and Jones et al. (US5,619,723) and Chen (US5,694,581) and further in view of Mizuno et al. (US5,608,891).

As per claim 37, the combination of Anderson and Jones and Chen teach the claimed invention as detailed above in the previous paragraphs. However, neither Anderson nor Jones nor Chen specifically teach a first FIFO memory coupled to an XOR gate and driven by a signal from

the XOR gate to access a first storage device and a second FIFO memory coupled to an XOR gate and driven by a signal from the XOR gate to access a second storage device as recited in the claims.

Mizuno discloses a first FIFO memory coupled to an XOR gate and driven by a signal from the XOR gate to access a first storage device and a second FIFO memory coupled to an XOR gate and driven by a signal from the XOR gate to access a second storage device [col.17 , lines 8-28].

It would have been obvious to one of ordinary skill in the art, having the teachings of Anderson and Jones and Chen and Mizuno before him at the time the invention was made, to modify the system taught by Anderson and Jones and Chen to include a first FIFO memory coupled to an XOR gate and driven by a signal from the XOR gate to access a first storage device and a second FIFO memory coupled to an XOR gate and driven by a signal from the XOR gate to access a second storage device because it would have improved system performance by reducing the time required for temporarily storing write data in memory and then exclusive oring the data to find redundant data as taught by Mizuno.

Response to Arguments

7. Applicant's arguments with respect to claims 19-37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 C.F.R. 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (703) 306-5839. The examiner can normally be reached on Monday to Friday 8:30 A.M. to 6:00 P.M., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim, can be reached on (703) 305-3821. The fax phone numbers for the organization where this application or proceeding is assigned are:

After Final (703)746-7238, Non-Official (703)746-7240 and Official (703)746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Pierre M. Vital

September 25, 2002

MATTHEW KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100